

lobed kidneys of birds and of certain Ophidian reptiles. Cavities, more or less roomy, in which are doubtless inserted the vessels of the hypertrophied mucous membrane, are also visible on the outer surface of the foetal placenta. But it is specially upon the internal aspect that the lobules form numerous folds exactly limited, of a thickness frequently considerable (more than one centimetre), strongly adherent to the chorion by a pretty long base, free for the most part for the rest of their extent. We can understand, then, up to a certain point, that Carus should have been able to compare this placenta with that of the ruminants, from which it nevertheless differs much, since its cotyledons are made up of full lobes, generally antequous, and not of isolated capsules, and distant one from the other like those of the foetal placenta in the cow, or the maternal one in the sheep.

But we are as yet more disposed to assimilate the placenta of Ai to that of the Lemuroids, notably that of the *Propithecus* of Madagascar, which has been described by M. Alphonse Milne-Edwards under the name of *placenta en cloche* or *placenta envahissant*. In Ai, as in *Propithecus*, the chorion is covered almost entirely with thick and crowded villousities, constituting a kind of vascular cushion resulting from the confluence of a multitude of irregular cotyledons. But the Ai approaches *Propithecus* not only in the structure of the placenta but also in its habits, for both are arboreal, and have a diet exclusively vegetable. Besides this the uterus of the Ai is pyriform, like that of the human female and the female of most apes, a peculiarity which, with the possession of pectoral mammae, approximates *Bradyptes* to *Propithecus*. Linnaeus and De Blainville seem then to have been guided by a "kind of divinatorial intuition," as it were, when they ranked the sloths of Brazil in the order of Primates, only that they ought not to be classed among the apes proper, but by the side of the *Propithecus* of Madagascar and the slow Loris of the East Indies, of which they are the analogues, or American representatives.

M. Joly finally concludes thus: By its bursiform placenta, as well as by many other peculiarities of organisation, the Ai is a Lemuroid, and not an Edentate.

Not the slightest allusion is made by M. Joly to the well-known publications of Prof. Turner upon the comparative anatomy of the placenta, and especially to a paper read before the Royal Society in May, 1873, upon the foetal structures of that variety of two-toed sloth called by Prof. Peters *Cholepus Hoffmanni*.

J. C. GALTON

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

THE Master and Fellows of Gonville and Caius College, Cambridge, have considerably enlarged the chemical laboratory of the College, and have added a small but very serviceable lecture-room, with apparatus-room adjoining. They have likewise provided a private laboratory for the Prælector. The main laboratory now accommodates fifteen students working at one time.

UNIVERSITY COLLEGE, BRISTOL.—The third session of this young institution opened on October 8. The competition for the entrance scholarships was closer than any preceding year, and the general standard of attainments higher. The engineering department of the College is now fairly started, and is almost, if not quite, unique in character, the principal engineering firms in the district having agreed to an arrangement, whereby they receive into their works the engineering students of the College for the six summer months, the six winter months being devoted to the theoretical training of the College. The number of male day students of the College has largely increased; the entries in classical and modern literature, in chemistry, mathematics, and physics, exhibiting a satisfactory increase on those of the preceding year. The attendance at the evening classes is also very large. The scientific side of the College course has been strengthened by the appointment of Mr. W. J. Sollas, M.A., F.G.S., as lecturer on geology. A course of lectures on analytical chemistry is being given by Prof. E. A. Letts, who also resumes his industrial lectures on Dyeing and Scouring at Stroud.—Mr. J. Clapham also continues his course of instruction on Textile Fabrics. A course of lectures on the Technical Applications of Electricity, by Prof. S. P. Thompson, is also announced. The morning lectures on Political Economy are this year delivered by Mrs. Paley Marshall.—Mr. L. A. Good-ave, B.A., has been appointed lecturer on Law.

SCIENTIFIC SERIALS

The American Journal of Science and Arts, September.—In an opening paper on the origin of comets Prof. Newton compares the hypotheses of Kant and Laplace, the former of which represents that these bodies are formed from the matter of the condensing solar nebula; the latter, that they have no relation with this, but were made from matter scattered through stellar space. He shows that the curve of actual distribution of the inclinations of cometic orbits to the ecliptic, agrees well with that required by the hypothesis of Laplace, if we first make reasonable allowance for known perturbations, and for the comets of short periods, but that it is not thus made to agree with Kant's hypothesis.—Prof. Gray explains the distribution of tree species in North America, and traces similar species dispersed over widely-separated continents to a polar centre, where they once flourished in a temperate climate. Among other facts he mentions that while the Atlantic American Forest has almost three times as many genera and four times as many species of non-coniferous trees as the Pacific Forest, it has slightly fewer genera, and almost one-half fewer species of coniferous trees.—Prof. Marsh describes a new pterodactyl from the Jurassic of the Rocky Mountains.—Professors Draper and Watson give their observations on the solar eclipse, and an intra-Mercurial planet respectively.—The animal of *Millepora alcorni* is figured by Mr. Rice, who confirms the conclusions of Agassiz.—Prof. Verrill notes some additions to the marine fauna of the east coast of North America; and among chemical notes is one on antimony tannate, by the Misses Swallow and Palmer.

Journal de Physique, September.—Some experiments showing the power of a vibratory motion to produce decomposition of explosive liquids and ebullition of superheated liquids are here described by M. Gernez. They consist in rubbing with a damp cloth a clean glass tube containing, e.g., supersaturated seltzer water that has been kept in it for months, or a little nitrous acid below water, or methylchlorhydric ether. In the two former cases there is a projection of liquid; in the latter, a vigorous boiling occurs but soon ceases, owing to the consumption of heat by the vapour formed, reducing the temperature to near the normal boiling-point.—M. Cornu gives an account of his valuable researches on the ultra-violet solar spectrum, which have from time to time been communicated to the Paris Academy.—M. Planté describes effects got with his rheostatic machine; it gives, in general, all the effects of electric machines and induction coils, and these are not apparently much interfered with by the hygro-metric state of the air.—We note, among the abstracts, one of recent proceedings of the St. Petersburg Physical Society.

Atti della R. Accademia dei Lincei (Rome) 1876-77, vol. i.—This part commences with a second instalment of Prof. Respighi's memoir on the latitude of the Roman Observatory.—On fluoride of magnesium, by A. Cossa.—On the theoretical velocity of sound and the molecular velocity of gases, by A. Rieti.—Petrographical studies, by G. Struever (two plates).—On the constitution of chloral ammonia and aldehyd-ammonia, by R. Schiff.—Electrostatic researches, by P. Volpicelli.—On the microscopic aspect of certain nervous fibres, by Franz Boll (two plates).—On some palæozoic fossils of the Maritime Alps and of the Ligurian Apennines, by B. Gastaldi (four plates).—On an objection to Melloni's theory of electrostatic influence, by P. Volpicelli.—Memoir on modular equations, by H. T. Stephen Smith.—On the dilatation, the capillarity, and the viscosity of fused sulphur, by G. Pisati.—On the titanite and the apatite of the Lama dello Spedalaccio, by G. Uzielli.—On the direction of gravity at the Barberini Station on the Monte Mario, by F. Keller.—Experimental researches on the tenacity of metals at different temperatures, by G. Pisati, C. Saporito, and S. Scichilone. The author experimented with copper, steel, brass, and aluminium.—Geological investigation of the mountain group of the Gran Paradiso, by M. Baretti (with seven carefully executed maps).—Experimental researches on electric discharges, by A. Richi (five plates). This and the previous one are amongst the most elaborate papers in the volume.—On the small oscillations of a rigid and perfectly free body, by V. Cerrutti.—On the anatomy and the physiology of the retina, by Franz Boll (one plate).—Ephemerides and statistics of the River Tiber before and after the confluence with the Aniene River, during the year 1876, by A. Bettocchi.—On some cave miriapoda of France and Spain, by F. Fanzago.—On the duration of vitality in the germinative spot, by Dr. G. Colasanti.

—Researches in theoretical crystallography, by G. Uzielli.—On the experimental determination of the electric density on the surface of conducting bodies, by E. Beltrami.

Reale Istituto Lombardo di Scienze e Lettere, Rendiconti, vol. xi. fasc. xiv.—xv.—We note the following papers in this number:—Colouring matters contained in the grape and a new means of judging of the degree of ripeness of this fruit, by S. Pollacci.—Transformation of hydroxylamine into nitrous acid, by Dr. Bertoni.—Action of solar rays on haloid compounds of silver, by Dr. Tommasi.—Reduction of chloral, by the same.—Results of vivisection of the cerebellum, the transverse peduncles, the semi-circular canals, and the nerves of taste, by Dr. Lussana.

SOCIETIES AND ACADEMIES

LONDON

Entomological Society, October 2.—H. W. Bates, F.L.S., F.Z.S., vice-president, in the chair.—Mr. J. Lawrence Hamilton, M.R.C.S., was elected a Subscriber, and Mr. Thos. Nottidge a Member of the Society.—In reference to the statement of Mr. F. Smith at the last meeting of the Society, to the effect that the Linnean collection of insects contained in the apartments of the Linnean Society had fallen into a state of complete neglect, Mr. McLachlan read a report on the result of an examination he had since made of that collection. Mr. McLachlan considered that the collection was now in the same condition as it had been for probably a quarter of a century, and that the charge of neglect could not be sustained. Mr. Stainton fully corroborated this view, and stated that from a recent examination of the lepidopterous portion of the collection he had been unable to detect any appreciable deterioration in it since the year 1848, when he had first occasion to consult it.—Mr. Jenner Weir exhibited specimens of *Hipparchia semele* from various localities, showing a tendency to vary in colour on the under side in accordance with the nature of the soil of the district in which the specimens had been taken.—Mr. McLachlan exhibited the eggs and young larvæ of *Ascalaphus longicornis*, found by M. E. L. Ragonot, in the Forest of Lardy, apparently the northern limit of distribution of the species. Mr. McLachlan also exhibited, on behalf of Mr. Edwin Birchall, an example of *Heliothis scutosa*, captured by Mr. Campbell in the north of Co. Donegal, Ireland.—Mr. Rutherford exhibited and communicated a description of a new species of cetonidæ, from Mount Camarouns. Mr. Rutherford also exhibited a specimen of *Ranalesoma ruspina*, which was curiously and symmetrically destitute of scales.—Mr. Champion exhibited specimens of *Amara infima*, taken at Cobham, Surrey.—Mr. Forbes exhibited a collection of insects from Switzerland.—Mr. Wood Mason read a note on a saltatorial *Mantis*, and exhibited a specimen of the insect which had been captured on the banks of the Tagus. He also read notes on the hatching period of Mantidæ in Eastern Bengal, and on the presence of stridulating apparatus in certain *Mantidæ*. Mr. Wood Mason also stated that he had discovered a remarkable case of viviparity in an orthopterous insect, *Panesthia javanica*, a cockroach inhabiting the tropical forests of Southern Asia and Australia.

PARIS

Academy of Sciences, October 14.—M. Fizeau in the chair.—The President announced the death of M. Delafosse, member in the Section of Mineralogy.—The following papers were read:—Presentation of vol. ix. of the "Observations of Pulkowa," by M. Otto Struve. This contains micrometric observations made by the author during forty years (with the same instrument and by the same method) on double and multiple stars. They continue the series of twelve years' like observations by his father at Dorpat. By these measurements M. Struve has been able to observe, e.g., the epicycloidal motions of the third star in ζ Cancri, to determine approximately the orbit of 42 Comæ Ber., and clear up the controverted system of 61 Cygni. The measurements in this volume relate chiefly to double stars of the Dorpat catalogue, in the northern hemisphere, and to all systems discovered at Pulkowa. Another volume will contain extended observations.—Formulæ relating to perforation of iron armour plates, by M. Martin de Brettes.—M. Decharme presented a supplement to his memoir on vibratory forms of solid or liquid bodies; it relates to experiments with a large glass plate, with which the former results (with small plates) were confirmed.—M. Champin communicated an observation regarding transformation of apterous into winged

phylloxera in the galls.—Third letter of Prof. Watson on the discovery of intra Mercurial planets. M. Mouchez considered the information here given answered his objections in great part, and left no doubt of the reality of the discovery of at least one of the two planets.—Reply to a communication by Herr Weber on thermodynamics, by M. Levy.—On a new micrometer, meant especially for meteorological researches, by M. Govi. In this the threads or fine wires are replaced by the two edges of a slit made in a very thin layer of silver, gold, platinum, or other inalterable metal, placed on the surface of a plate of glass having perfectly plane and parallel faces. The slit is produced by means of a light metallic tracer; and for larger slits the tracer is made to remove the metal in advancing parallel lines. Advantages attach to the extreme thinness of the metallic layer, its opacity, rigidity, and inalterability under considerable thermometric and hygrometric changes, the possibility of easily making slits as narrow or as wide as may be desired, and the facility of substituting different plates for each other in the same frame.—On a new metal, *philippium*, by M. Delafontaine. It is so called in honour of M. Philippe Plantamour, of Geneva, the friend and pupil of Berzelius. The author's former conclusions are confirmed; the new earth (of samarskite), which has a colour and a molecular weight intermediate between those of yttria and terbine, is not a mixture of these two bodies, but an oxide of a new metal. Supposing provisionally that philippine is a protoxide, its approximate equivalent is between 90 and 95. M. Delafontaine gives the properties of some compounds, the philippic formate, sulphate, nitrate, &c., and describes the spectroscopic appearances given by concentrated solutions of philippium. These present a very broad characteristic absorption band which is absent from terbic, yttric, and erbic solutions.—Action of the juice of beet-leaves on perchloride of iron, under the influence of light, by M. Pellet. It has, in absence of chlorophyll, the power of reducing salts of iron easily, in light. This reduction may take place in the dry state, and with solutions having no longer vitality. It is due to oxidation of several organic substances contained in the leaves, such as sugars, tannin, azotised matter, &c.—M. Ronder presented a note on an arrangement for observing the stars in broad daylight, without the aid of a telescope; it consists in the use of a long tube, the lower end of which terminates in a dark chamber.

CONTENTS

	PAGE
THE CONSERVATION OF RIVERS	661
STELLAR OBJECTS SEEN DURING THE ECLIPSE OF 1869. By J. R. Hind, F.R.S.	663
LAKE DWELLINGS.	664
OUR BOOK SHELF:—	
"Annual Record of Science and Industry for 1877"	665
Whitworth's "Choice and Chance"	666
Magnus' "Hydrostatics and Pneumatics"	666
Brown's "Pine Plantations on the Sand-Wastes of France"	666
Caruel's "Vegetable Morphology"	667
LETTERS TO THE EDITOR:—	
American Exploration.—Capt. W. A. Jones	667
Geological Climate and Geological Time.—Prof. Joseph Le Conte	668
The Magnetic Storm of May 14, 1878.—W. H. Preece	668
Giddiness.—F. G.	669
OUR ASTRONOMICAL COLUMN:—	
The Saturnian Satellite, Hyperion	669
The Mean Parallax of a Star of First Magnitude	669
ON THE TIDES OF THE SOUTHERN HEMISPHERE AND OF THE MEDITERRANEAN. By Capt. Evans, R.N., F.R.S., and Sir William Thomson, LL.D., F.R.S.	670
THE PHYSICAL FUNCTIONS OF LEAVES (With Illustrations).	672
EDISON'S INVENTIONS (With Illustrations)	674
COLOUR BLINDNESS IN RELATION TO THE HOMERIC EXPRESSIONS FOR COLOUR. By Dr. W. Pole, F.R.S.S. L. and E.	676
CHEMICAL NOTES:—	
Estimation of Mercury	679
Separation of Antimony and Arsenic	679
Specific Heats of Mercury and Iron	679
Latent Heat of Water at Temperatures below 0° C.	679
Preparation of Salts of Nitrous Oxide	679
On Manganese Tetrachloride (MnCl ₄)	679
Spontaneous Ignition of Hydrogen by Finely-divided Zinc	679
METEOROLOGICAL NOTES	680
GEOGRAPHICAL NOTES	680
NOTES	681
ON A NEW METHOD OF STUDYING THE OPTICAL CHARACTERS OF MINERALS. By H. C. Sorby, F.R.S., Pres. G.S., &c.	684
RECENT OBSERVATIONS UPON THE PLACENTATION OF THE SLOTHS. By J. C. Galton	686
UNIVERSITY AND EDUCATIONAL INTELLIGENCE	687
SCIENTIFIC SERIALS	687
SOCIETIES AND ACADEMIES	688